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ABSTRACT

To provide a reliable correlation of how the "basics" are strengthened by implementing career education units, concepts, and/or skills into existing curricula, the Career Education Project of the Kentucky Valley Educational Cooperative studied the achievement of career education and non-career education students in reading, mathematics, and effective written and oral communications. The California Comprehensive Tests of Basic Skills were used to pre- and post-test the reading, language, arithmetic, and study skills of control groups of third-, fifth-, and tenth-grade students; the study skills scores were omitted from the study. Implementation guidelines were distributed for use in the orientation of participating schools and teachers. Teachers were to teach one unit per semester which emphasized the teaching of the basics and seven of thirteen suggested principles of career education. Some examples of the career education treatment and emphasis were "The Telephone," a third-grade unit using free materials from a telephone company; fifth-grade marine science, a unit for which a bibliography was developed and a spelling match conducted; and a tenth-grade unit on career education in algebra II and another entitled "English and the World of Work." (The material is presented in a question-and-answer format. An appendix gives the results of an analysis of the academic achievement data.) (YLB)

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Career Education and Basic Education

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A Definition of Career Education
by
Kenneth B. Hoyt
Director
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"Career education can be defined as *an effort aimed at refocusing American education and the actions of the broader community in ways that will help individuals acquire and utilize the knowledge, skills and attitudes necessary for each to make work a meaningful, productive and satisfying part of his or her way of living."**

*Hoyt, Kenneth B., *A Primer For Career Education*, 1977, p. 5.

Career Education and Basic Education

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CAREER EDUCATION AND BASIC EDUCATION

Do they help or hinder?

Q. What basic problems caused this study?

A. Career Education, as an approach to education, emerged early in this decade with federal money establishing demonstration projects throughout the nation. Lauded by some, lampooned by others, it has recently come under severe pressure from two angles; dwindling federal funds and a call from the "grass roots" for a return to the basics in education. There are those who contend that career education is "fun and games," that it weakens the teaching of the "basics." Just as stoutly, career education advocates maintain that career education helps students learn abstruse concepts by relating these concepts to concrete applications, that it motivates students by showing relationships between the academic world and the world of work, that it in general strengthens basic skill development.

Q. Have there been previous studies of this nature?

A. It is not the purpose of this document to review exhaustively the literature in terms of the problem but it should be noted that Dr. Clayton Omvig conducted two previous studies concerning the effects of career education in the Kentucky Valley Educational Cooperative.

The first study was conducted after the first year of the program (1974). The main conclusion germane to this study states: "Academic achievement levels did not vary to any great extent between the groups. This was expected since a one-year time frame is probably too short for significant academic achievement level changes."

The second study was essentially a replication of the first one and was conducted in 1976, three years after the inception of career education in the KVEC. The most pertinent (to the current study) conclusion drawn by Omvig is as follows:

> *Sub-hypotheses were also tested relative to group differences (Career Education versus Non-Career Education). The null hypothesis predicting no significant difference between the groups on achievement scores was rejected on five subtests for fourth graders and two subtests for eighth graders. In all cases, the Career Education students had the higher scores. No significant differences were found for eleventh graders; therefore, the null hypothesis was not rejected. Overall, Career Education students tended to demonstrate higher achievement scores. Only in a few cases (mostly in the eleventh grade) did Non-Career Education students consistently score higher. The scores were not significantly higher.*

But these studies were more global in nature, studying other factors

than academic achievement. And, according to Omvig they used a quasi-experimental design. The current study uses a tight, experimental, pre-post test design.

Q. What was the specific objective of the study?

A. One of the objectives for the Career Education Project of the Kentucky Valley Educational Cooperative for 1978-79 was stated as follows:

TO PROVIDE A RELIABLE CORRELATION OF HOW THE "BASICS" ARE STRENGTHENED BY IMPLEMENTING CAREER EDUCATION UNITS, CAREER EDUCATION CONCEPTS AND/OR SKILLS INTO THE EXISTING CURRICULUM. It is anticipated that ninety per cent (90%) of the career education students compared to the non-career education students will show a higher achievement in the "Basics" (Reading, Mathematics, and Effective Communication – both written and oral), using the California Comprehensive Tests of Basic Skills (CTBS) on a pre-post test design.

Q. What was the population and sample?

A. The population consisted of all students within the KVEC area. The sample groups included intact classes at the third, fifth and tenth grade levels.

Q. What instrument was used and how was the data collected?

A. The California Comprehensive Tests of Basic Skills (CTBS) is a testing series designed to test student skills in reading, language, arithmetic, and study skills (State-Wide Testing Program, p. 4). There are four levels in the testing program: Level 1 accommodates the second half of Grade 2 and Grades 3 and 4; Level 2 covers Grades 4, 5, and 6 overlapping Level 1 and Grade 4; Level 3 includes Grades 6, 7, and 8 overlapping Level 2 and Grade 6; and Level 4 is addressed to Grades 8, 9, 10, 11 and 12, overlapping Level 3 at Grade 8.

Levels 2, 3, and 4 of the CTBS Battery include the following tests:

Reading Vocabulary
Reading Comprehension
Language Mechanics
Language Spelling
Arithmetic Computation
Arithmetic Concepts
Arithmetic Applications
Study Skills Using Reference Materials
Study Skills Using Graphic Materials

The total battery consists of 318 multiple-choice items; 85 items relate to Reading, 85 to Language, 98 to Arithmetic, and 50 to Study

Skills. The tests were administered in accordance with the instructions outlined in the Examiner's Manual. Two to three days were required in most instances to administer the tests.

Study skills scores were omitted from the study.

Tenth grade students were pre-tested by the Regional Career Education Staff and participating teachers in November, 1978. Pre-test data for the third and fifth grade students came from the Statewide Testing Program administered in April, 1978, and already on hand in the participating school districts. Post-test data for all grade levels came from the Statewide Testing Program administered in April, 1979.

Q. How were participating schools and teachers selected?

A. First the regional career education staff selected three systems that were contiguous and convenient. Then, we asked the career education coordinator in these systems to identify teachers at each grade level who might like to participate. A list of guidelines was communicated to the identified teachers via the career education coordinator. Some chose not to participate after studying the guidelines.

Q. Was there bias in the selection process?

A. Only in that it was a strictly voluntary program, and it can be assumed that participating teachers were confident and competent. There is good reason to believe that any system in the Kentucky Valley Educational Cooperative could have provided classes such as those in the experimental group.

Q. How was the control group selected?

A. Again, the two major criteria were convenience for the Regional Career Education Staff and accessibility. A large school system in KVEC was without a career education coordinator and career education was not being "pushed" for various reasons. Personnel in this system agreed to let the KVEC-CE staff have access to their test data for control purposes. To the knowledge of this writer, those in the control group did not benefit from the career education treatment during the time span of this study.

Q. Were there guidelines developed for the implementation of this program?

A. Following is a set of guidelines that were distributed to the career education coordinators and later used in the orientation process with participating schools and teachers. Although part of this information overlaps other questions, the guidelines are included in total because of their importance in the implementation process.

Implementation Guidelines for Objective No. 4

1. It is proposed that the experimental group consist of three third grade classes (from three different school systems); three fifth grade classes (from three different school systems); and four tenth grade high school teachers (from two different systems).
2. It is proposed that the control group come either from comparable schools within our region or from systems contiguous to Kentucky Valley Educational Cooperative.
3. It is proposed that the teachers who participate will teach one unit per semester that will emphasize the teaching of the BASICS and PRINCIPLES OF CAREER EDUCATION. For example, a fifth grade class may wish to invite a bank vice-president to class who will not only make them aware of careers within the banking field, but will teach them how to figure principal and interest in at least three different ways.
4. It is proposed that each participating teacher use at least seven (7) of the following career education principles in the teaching of the unit:
   - Emphasize how the subject matter is used by persons on the job;
   - Reward students for what they have accomplished rather than pointing out what they still need to accomplish;
   - Bring variety to the classroom by looking beyond the classroom walls for resources;
   - Consciously and conscientiously provide rewards to students who exhibit and practice such basic good work habits as (a) coming to work (school) on time; (b) completing assignments that are begun; and (c) cooperating with one's fellow students;
   - Practice learning by doing;
   - Practice decision-making skills with the class;
   - Attempt to reduce sex and race bias in career thinking;
   - Help students develop a sense of constructive work values, such as, Why should everyone work? Or, how does one cope with drudgery or demeaning tasks such as cleaning up the rest room;
   - Help students broaden their horizons in terms of career choices;
   - Help provide information for the job requirements for a large number of careers;
   - Help students to critically evaluate our free enterprise system;
   - Consciously and overtly hold high expectations for the class; and
   - Push, guide, lead, cajole, and love the class to extend itself to the utmost of its ability.

5. It is proposed that the teachers involve, intertwine, and emphasize the basics at every turn. Put another way, every activity, career education or otherwise, should be aimed at teaching a basic skill or concept.
6. It is proposed that participating teachers, their principals, their career education coordinators, and their superintendents meet with the regional career education staff for a two-day orientation session at a to-be-selected school a week prior to the implementation of the career education units. During the sessions, the regional staff will explain the mechanics of the objective as well as explain ways and means of achieving and implementing the career education principles. The career education coordina-

tors will explain, give examples and show by demonstration and involvement how subject matter can be strengthened by using the career education principles at the specified grade levels above.

7. The teachers will brainstorm with their counterparts ways and means of strengthening the basics within their career education units and will share with the group their findings. Principals will work alongside their teachers to offer suggestions and provide support for the activity. Superintendents will serve as advisors.
8. It is proposed that the regional staff will visit each teacher, at least once every two weeks, sit in on the instruction, take notes and confer with teacher and career education coordinator. It is proposed that the regional career education staff be allowed to bring visitors to class and to make suggestions, tactfully, of course, to the CEC and teacher.
9. In short, this is a proposal to ascertain whether the basics can be strengthened via career education under a well-planned and exemplary situation.
10. It is hoped that you will choose to be a part of this exciting opportunity.

Q. Were the principles of career education identified in the guidelines explained to participating teachers?

A. Yes, these were developed in some detail during the orientation meeting. Following is the development of principles No. 2, "Reward students for what they have accomplished rather than point out what they still need to accomplish."

EXAMPLE: Recently a young man was trying to develop his punting skill for his high school football team. He had marked off with stakes distances of 33 yards, 35 yards, and 40 yards. When he first began, he averaged 29 yards for 20 punts. Gradually, his average climbed to 34 yards, but as so often happens in a performance feat, he reached a plateau and regressed. He became discouraged in his attempt to reach an average of 40 yards which was his goal. But then his coach pointed out that he had begun with an average of 29 yards and had made good progress and to look, dwell, celebrate, and feast on his accomplishments. This backward look reduced his anxiety and he once again began to progress toward his goal.

EXAMPLE: Look at that room you have already cleaned rather than the five you have still to clean when you have only one hour before company arrives.

EXAMPLE: Instead of becoming discouraged at all the weeds in your garden, rejoice over the one row you have already weeded.

EXAMPLE: Tell me not that it is partly cloudy, rather say, "It is partly sunny today."

The point is that a positive frame of mind gives us a psychological edge that enables us to produce more effectively.

In the teaching of these two units, let us try this experiment: instead of telling the student that he or she missed three, let us tell him or her that he or she got 17 correct. Let us mark those that are correct boldly and conspicuously. Let us mark those that are wrong unobtrusively. Let us tell the class that twenty-five are behaving nicely, not that two or three of you are being disruptive.

Q. To what extent were these guidelines followed?

A. The orientation session schedule was modified for the convenience of the participants and visits by the regional staff were reduced to once each semester, because participating teachers did not particularly like the disruption which visitors cause in their classes.

Q. Was the career education treatment consistent?

A. Generally, yes. However, one participating teacher at the fifth grade level resigned during the year after completing one unit and this class was handicapped by having to adjust to a new teacher. And, at the high school level, participating teachers tended to weave into their subject areas career education concepts and principles while the third and fifth grade level teachers normally fused subject matter and basic skills into their career education units.

Q. When did the career education treatment take place?

A. Participating teachers were urged to finish one career education unit or emphasis prior to Christmas, 1978, and the other unit or emphasis prior to April, 1979. However, a severe winter caused some disruption in the schedule.

Q. What was the length of the career education treatment?

A. It was suggested that a six weeks time frame each semester should be the goal, although this was not strictly adhered to. Some spent only two-three weeks on their units *per se*, but were involved in other career education activities above and beyond their units such as "utilizing the principle of rewarding students for what they had accomplished" throughout the semester.

Q. What role did the Regional Career Education Staff play in the career education treatment?

A. The primary function of the career education staff was that of encouraging participating teachers. As mentioned previously, it seemed more appropriate as we got into the experiment to limit our visits to participating teachers to once each semester and that is what we did.

It was also the intention at the beginning to make suggestions to participating teachers but this is a "touchy" proposition in that the regional staff are not directly employees of the local school systems, and our relationship could have been strained if suggestions were either untactfully made or sensitively perceived. Therefore suggestions from the regional staff were minimal.

Moreover, participating teachers appeared to be doing an outstanding job and needed little guidance from the regional staff. Probably the only generalizable area of deficiency was in the area of teaching listening skills. But this deficiency appears to be widespread throughout the KVEC area.

To summarize, the regional staff arrived for the observation, stayed for approximately forty-five minutes, positively reinforced the teachers, on occasion served as resource persons, assisted in the arrangement of field trips, and interviewed participating teachers after the completion of the program.

Q. What career education units or emphases were taught in the program?

A. "The Veterinarian," "The Telephone," "The Newspaper," "Our Environment," "The Library" and "The Dentist" were taught at the third grade level. "Marine Science," "Home Economics" and "Being Yourself" were taught at the fifth grade level. "Economics of Home Ownership," "Buying and Selling Stocks," "Careers in Focus," "Everyday English" and "English in the Business World" were among the emphases at the tenth grade level.

Q. What are some examples of the career education treatment?

A. THIRD GRADE – "THE TELEPHONE"

The teacher of "The Telephone" utilized extensively free materials from the Bell Telephone Company. Following is an excerpt from one of their publications, *Telezonia*.

> *The use of an everyday instrument like the telephone is an example of language arts and social studies in process. Think about people you know who handle themselves exceptionally well on the telephone. They speak clearly, distinctly, and confidently. They listen attentively and treat the person on the other end of the line courteously ...*
>
> *Kindergarten and first grade children are, of course, eager to be independent, to tie their own shoes, to tell time, to tune the TV, to make their own telephone calls. The telephone is one instrument that can help them to develop the feelings of poise and self-confidence that accompany such skills.*

THIRD GRADE – "THE NEWSPAPER"

The teacher utilized a local newspaper editor as a resource person, a trip to a newspaper office, and the production of a student newspaper as career education foci. Following is a portion of the student newspaper.

KET AT W.B. MUNCY

KET AT W.B. MUNCY

This year at W.B. Muncy we have started KET. In an interview with Mrs. Maggard she explained that KET means Kentucky Educational Television. The school has two colored TV's. The classes will be allowed to take a TV to their room to watch such programs as "Word Feathers", "Math-Country", "Cover to Cover", and "Kentucky History".

by Polly Begley

NATIONAL LIBRARY WEEK

W.B. Muncy students enter National Library Week 1979 Statewide Contest. The students will win a chance to represent Leslie County. Winners will be awarded with an afternoon with Kentucky's finest at the Governor's Mansion.

It was sponsored by the Kentucky Library Association in conjunction with Kentucky's observance for the International Year of the Child.

FIFTH GRADE – MARINE SCIENCE

(Following is a portion of the bibliography developed for the unit):

1. Adrian, Mary, *Fiddler Crab*, E.M. Hale and Co. 1961
2. Asimov, Isaac, *ABC's of the Ocean*, Walker and Co. New York, 1970
3. Barnett, Lincoln, and the Editorial Staff of Life, *The World We Live In, The Development of Life; The World We Live In, The First Four Billion Years*, Time Inc., New York, 1955
4. Bartlett, Margaret F., *Where the Brook Begins*, Thomas Y. Cromwell Co., New York, 1961
5. Bauer, Helen, *Water, Riches or Ruin*, Doubleday and Co. New York, 1959
6. Bergaust, Erik, *Colonizing the Sea*, G.P. Putnam's Sons, New York, 1976
7. Black, Erma S., *Busy Water*, Holiday House, 1958
8. Buck, Margaret, *Along the Seashore*, Abingdon Press, New York, 1964
9. Buehr, Walter, *Sea Monsters*, W.W. Norton and Co., New York, 1966
10. Carr, Marion B., *The Sea and Shore*, Golden Press, New York, 1959

FIFTH GRADE – MARINE SCIENCE

The teacher conducted a spelling match between two groups of students on terms they had encountered and mastered during the unit. The spelling match was via a baseball game with those who spelled a word correctly advancing on the bases. The team that scored the most runs won the game. Competition was keen, group support for individuals was much in evidence, and interest was extremely high.

TENTH GRADE – CAREER EDUCATION IN ALGEBRA II

Part of the genius of career education is its emphasis on the practical, of relating academic concepts to the work world. Following are some examples:

- while working with inverse variation, the class solved problems dealing with frequency and radio waves.
- computed the cost of electricity for the average family
- related "parabola" to headlights on a car, the path of a rocket
- related "circle" to wheels on a car
- solved problems of farmer concerning the number of rows and number of trees to plant in a given area.

TENTH GRADE – ENGLISH AND THE WORLD OF WORK

Following are some excerpts from a summary written by one of the participating teachers.

BACK TO BASICS

We started this unit by having a class discussion of how one can use grammar in the everyday jobs. At first, the students saw no need for grammar at all. As the discussion continued, they began to offer suggestions as to some ways all jobs required a minimum knowledge of the English language. After our discussion, each student wrote a paragraph explaining what he or she wanted to do when he or she graduated from high school. Then the student told how the knowledge of the correct grammar usage and English skills could help.

Another thing which we did during this unit was to search through the want ads of the newspaper to see the kinds of jobs available, the skills involved, and the pay and fringe benefits which accompanied these jobs. Each student then chose ONE job which he or she was interested in. We studied business letter writing discussing the proper forms, capitalization, punctuation, etc., related to business letters. The student then wrote a letter applying for the job he or she had chosen from the newspaper want ads. After this, we talked about the different types of applications and how to fill one out. We used sample applications so that each person had one to fill out.

Q. Were there special difficulties in conducting the study?

A. Probably the greatest difficulty was in grading the California Tests of Basic Skills. It takes approximately 15 minutes to hand score a test and converting the raw score to grade equivalency consumes more time. To be sure, we were able to use much data from printouts from the testing service of the Kentucky State Department of Education, but there was no pre-test data for the tenth grade, either in the experimental or control group; therefore, the entire tenth grade sample had to be pre-

tested, including the control group. Unwisely, we chose to hand score these tests.

Another complicating factor concerned the problem that the pre-tests of the tenth grade was Form Q of CTBS, whereas the State Testing Program used Form S. Conversion of Form Q scores to S scores, as we did them, was a six step process, again time consuming and laborious.

APPENDIX

Analysis of Achievement Measures

by Dr. Clay Omvig
College of Education
University of Kentucky
August 15, 1979

Presented in this section of the document are the results obtained through the analysis of academic achievement data. The "basics" achievement data were collected from participating groups of third, fifth, and tenth grade students. The teachers of the career education group of students participated in the "Back to the Basics" program, utilizing career education as the medium. The non-career education group, the control group, was selected from a similar school setting which did not participate in the career education and back to the basics project. For all three grades, the groups were selected so as to minimize initial group differences which could accompany the group sampling procedure involving intact classes. Analysis of previous year test results revealed that the two groups were essentially the same prior to treatment.

Three summary scores from the California Comprehensive Tests of Basic Skills (CTBS) were utilized to test the null hypothesis of no difference between the two groups relative to posttest achievement data. The three summary scores were: (1) the Reading Total Score, derived from subtests for vocabulary and comprehension; (2) the Language Total Score, derived from subtests for mechanics and spelling; and (3) the Arithmetic Total Score, derived from subtests for computation, concepts, and application. CTBS scores were reported as grade equivalent scores. Means were generated for all student groups—career education and non-career education, and for males and females. The analysis of variance technique was utilized to test the hypothesis concerning the effect of the career education program on the measures of student achievement. A two-by-two (Sex by Group) analysis of variance was selected so that results could be analyzed regarding sex differences, group differences, and any interaction between sex and group. The .05 level of significance was established prior to data treatment.

The test for interaction between sex and group was non-significant, indicating that the group achievement data were independent from sex. In other words, the experience didn't affect boys any differently than it did girls. Since interaction was not present for any of the measures, the main effect variables group and sex could be analyzed separately. Summaries of this analysis appear in Tables one through three.

Presented in Table 1 are the results obtained from analysis of the third grade achievement data. No significant sex differences were identified. Boys and girls achieved at similar levels. However, two significant group differences were found. The career education group of students scored significantly higher than the non-career education group on both the reading and the language sections of the CTBS. Significant differences were not present for the arithmetic section; however, the career education group achieved a somewhat higher grade equivalent score.

TABLE 1. Analysis of Variance for CTBS Scores of Third Grade Students (By Sex and By Group)

Variable	SEX				GROUP			
	Males	Females			Career	Non-Career		
	$\bar{X}$	$\bar{X}$	F-Value	P	$\bar{X}$	$\bar{X}$	F-Value	P
Reading	3.58	3.80	0.81	.37	3.97	3.17	7.26	.01*
Language	3.58	3.97	1.75	.19	4.01	3 25	8 55	.01*
Mathematics	3.55	3.68	0.64	.43	3.81	3.42	3.11	.08

*P .05

Presented in Table 2 are findings relative to the analysis of fifth grade data. Again, two significant group differences were observed, both in favor of the career education group of students. Differences were present for the reading measure and for arithmetic. One sex difference was also observed, with girls scoring significantly higher than boys on the language section of the CTBS.

TABLE 2. Analysis of Variance for CTBS Scores of Fifth Grade Students (By Sex and By Group)

Variable	SEX				GROUP			
	Males	Females			Career	Non-Career		
	$\bar{X}$	$\bar{X}$	F-Value	P	$\bar{X}$	$\bar{X}$	F-Value	P
Reading	5.02	5.50	1.17	.28	6.22	4.29	20.55	.01*
Language	4.96	6.08	3.96	.05*	5.82	5.47	3.21	.09
Mathematics	5.34	5.79	1.30	.26	5.98	5.15	5.27	.02*

*P .05

The final analysis concerned tenth grade achievement data. These findings are presented in Table 3. One significant group difference and one sex difference were observed. The group difference again favored the career education students, with this group scoring significantly higher on the language section of the CTBS. The sex difference was for the CTBS arithmetic measure. Tenth grade boys scored significantly higher than girls on the math section of the test.

TABLE 3. Analysis of Variance for CTBS Scores of Tenth Grade Students (By Sex and By Group)

Variable	SEX				GROUP			
	Males	Females			Career	Non-Career		
	$\bar{X}$	$\bar{X}$	F-Value	P	$\bar{X}$	$\bar{X}$	F-Value	P
Reading	9.74	9.28	1.45	.23	9.85	9.17	2.56	.11
Language	9.48	9.77	0.19	.66	10.07	8.78	9.88	.01*
Mathematics	9.79	8.58	7.35	.01*	9.56	8.80	1.53	.22

*P .05

Overall, the analysis revealed results favorable to the career education group of students. This group of students consistently scored higher than did the non-career education group. Previous research conducted on the effects of the KVEC career education project also produced results which supported the positive effect which the program has had on basic academic achievement; however, those results were not as pronounced as those obtained for the present analysis, in which five of nine comparisons were significantly higher for the career education groups. This greater difference might be explained due to the extensive, one-to-one involvement of these students' teachers and the KVEC career education project staff.